SESSION I
TIME: Tuesday 13 April, 8:30-10:00
ROOM: Gibson (6th Floor)
TRACK: Planning Community of Practice
TOPIC: Dam Removal for Restoration
MODERATOR: Brad Thompson, Rock Island District

PRESENTATIONS:

**Title: Plan Formulation Considerations in Dam Removals**
**Presenter: Jock Conyngham, ERDC**

Abstract: Dams, which exist in high densities in many US river systems, have emerged as central issues in infrastructure management and aquatic ecosystem restoration. FEMA estimates 85% of large dams in the US will have exceeded their design lifespan by 2020. In 2000 and 2001 520 dam incidents and 61 dam failures were reported. Nearly 10,000 dams are labeled as high hazard potential and an additional 2,100 as unsafe; both categories show significant recent growth. The roles of dams in limiting populations of various threatened and endangered species and in both localized and larger scale degradation of aquatic ecosystems have received broad attention. Restoration mandates, financial constraints, and public safety concerns have put dam removal in high profile in recent years. However, a recent cohort of small dam removals has led to occasional but significant occurrences of released toxins or nutrients, channel instability, downstream sediment impacts, and invasions of exotic species. Scientists and regulators are expressing concern about the impacts of current removal practices. Planning needs and issues can include sediment management, associated channel restoration, ice regime changes, control of invasive exotics, public perceptions and desires, implementation efficiency, and risk management. Opportunities to minimize costs and impacts of dam removal will be presented.

**Title: Goldsborough Creek Dam Removal and Stream Restoration Project Mason County, Washington**
**Presenter: Linda Smith, Seattle District**

Abstract: The Goldsborough Creek Dam Removal and Stream Restoration Project is located in Mason County, Washington and was authorized under Section 206 of the Corps' Continuing Authorities Program. The project removed a deteriorated dam structure that was a barrier to fish passage along Goldsborough Creek. Upstream of the project the creek flows freely through forested areas and includes over 13 river miles draining approximately 51.4 square miles of high quality habitat. The restoration objective was to remove the dam and to restore and stabilize Goldsborough Creek to a more natural gradient using a series of weirs to allow for unhindered upstream and downstream passage of resident and migratory fish. The design and engineering focused on the replacing the dam with a series of weirs upstream and downstream of the dam. The final design featured 36 weir structures consisting of driven H-piles with pre-cast concrete panels used as lagging. Each weir was of a dogleg shape in plan, and a V-shape in cross section, to direct flows toward the center of the stream, and includes a cast-in-place concrete weir cap. Bank erosion protection was also an important component of the project since the stream is confined within its main channel and the peak flows typically last for a number of days. Combinations of riprap, fabric-wrapped-reinforced-soil lifts, and vegetation were designed to withstand the expected flows up to 2,200 cfs within the 2000-foot long project reach.

Construction began in the spring of 2001 with the installation of a 1600-foot long diversion structure that conveyed all surface flows around the project while providing fish passage of downstream migrants during construction. Once the diversion was in place and the stream dewatered, the project proceeded

with demolition, earthwork to regrade the stream, pile-driving of more than 500 H-piles, installation of the concrete weirs, construction of riprap and bioengineered bank protection, and placement of habitat features. Problems encountered during construction included control of groundwater and discovery of unexpected hazardous waste. Construction was completed on time when flows were diverted back into the stream in October 2001. The local sponsor completed final re-vegetation in November/December. The project was put to the test very quickly when an estimated 5- to 10-year flood event occurred in late November 2001. The project performed above expectations given the size of the event and the fact that much of the re-vegetation was not yet established.

The project was completed on time and within budget and has received positive responses from federal state and local agencies, environmental groups, the local, national, and international media, and the local populace. It is considered a great success by the implementation team.

**Title: Cuddebackville Dam Removal Project - Partnership with The Nature Conservancy**
**Presenters: George Shuler, The Nature Conservancy; Brian Mulvenna, Philadelphia District**

Abstract: The Cuddebackville Dam Removal Project was developed with the Eastern New York Chapter of The Nature Conservancy, Inc. (TNC) and coordinated with the U.S. Fish and Wildlife Service, U.S. Geological Survey, National Marine Fisheries Service, U.S. Environmental Protection Agency, and the New York Department of Environmental Conservation. TNC is serving as the agent for the dam's owner, Orange County, New York and the Corps' local sponsor.

One project design limitation conditioned by the owner was the need to ensure maintenance of flows in the feeder canal to the historic Delaware & Hudson Canal. Multiple project concept designs for removal of either or both of two dam segments and maintenance of flows in the D&H feeder canal were evaluated in terms of project costs, ease of construction, dam safety, historical and recreational considerations, and fish passage success. The restoration project goals considered several alternatives including breaching and/or removal of both segments of the dam.

The selected plan is removal of the southwest dam segment, requiring construction of an access road through the surrounding D&H Canal Park to the project site. A permanent road was selected in lieu of a temporary road for future TNC monitoring and restoration purposes. The road configuration minimizes impacts to wetlands in the project area. A temporary bridge will be constructed across the Neversink River downstream of the northeast dam. Cofferdams will be installed before dam removal to dewater the area around the dam and limit downstream movement of sediment. The dam will be demolished by mechanical means and rubble hauled to an appropriate disposal site. The streambed will be regraded, as appropriate, to ensure the re-creation of a natural channel and prevent future scouring. After dam removal is complete, the temporary bridge will be removed and disturbed areas will be replanted.

**Title: Lessons Learned from New England District Dam Removal Activities**
**Presenter: Bill Hubbard, New England District**

Abstract: Throughout New England's 300 plus years of industrial development many rivers have furnished power to support the regions economic growth. As these structures age and other power sources have developed, dam removal is economical and environmentally attractive to many states and communities. The Corps Section 206 program, General Investigations and even Innovative Readiness Training of military reserve units have opened up our rivers. Projects in the New England District are targeted at anadromous fisheries restoration, reconnecting our rivers to the sea. Dam removal opens the riverine migratory corridor and removes the impoundments that have been a source of predation on migrating juveniles. Several case studies will be presented along with a detailed analysis of the Smelt Hill Dam Section 206 project.

SESSION III
TIME: Tuesday 13 April, 3:30-5:00
ROOM: Gibson (6th Floor)
TRACK: Planning Community of Practice
TOPIC: Applications in Planning Capability, Review and Coordination
MODERATOR: Forester Einarsen, HQUSACE

PRESENTATIONS:

**Title: External Independent Review Panel: Columbia River Project**
**Presenter: Brian R. Shenk, Portland District**

Abstract: This paper will present our successful experiences in Portland District with an external independent review panel on the Columbia River Channel Improvement project. We have a few lessons-learned to share. I will cover the highlights of our process, including: the panel selection process; public involvement challenges; the actual review process; and media coverage issues. The information should be relevant to other districts that will be looking into using an external panel in the future (I've already been contacted by two districts to discuss our process).

**Title: "Agreeing Before The Results Are Known" Interagency Coordination In The Savannah Harbor Expansion Project**
**Presenter: William Bailey, Savannah District**

The Savannah District of the U.S. Army Corps of Engineers is jointly conducting a General Reevaluation Study of the Savannah Harbor Expansion Project in conjunction with the project's sponsor – the Georgia Ports Authority. One of the cutting edge approaches we are following is in the area of interagency coordination.

A problem that the Corps has often faced in the past has been the surfacing of a major disagreement when a draft EIS is being reviewed by a resource agency. At that point in time, most of the project's money has been spent and managers are strongly looking toward the end of the process, when the final reports will be approved. The surfacing of disagreements on foundational issues at that point are difficult to deal with and usually result in adversarial tones between the parties involved.

In this project we decided to engage the natural resource agencies early in the course of the study, rather than wait until the end. The goal was to obtain incremental approvals as we moved through the process. To accomplish this, we reviewed the comments obtained through the NEPA scoping process to identify resources that were likely to be critical to the environmental and political acceptability of the alternatives that we expect to consider. For this project, we felt that the issues of Wetlands, Water Quality, Fisheries, Groundwater, and Sediment Placement would be critical. We then organized an interagency team of regional technical experts for each of those six issues. We met periodically and communicated by email or teleconference when appropriate to reach agreement on the steps and technical decisions being proposed for the project. Through this coordination, the project has obtained approvals on the following issues: what natural resources are critical in the estuary; the tools needed to identify physical changes in the estuary from the alternatives; field data to be collected; and how environmental impacts will be determined. With these interim agreements, we are much more likely to see eye to eye at the end.

**Title:** **Bulletproofing Decision Documents**
**Presenters:** **Diana J. Laird, Galveston District**
**Dave Bastian, Dawson and Associates**

Abstract: Districts want and need to get their reports through the Washington level review (HQUSACE, ASA(CW), and OMB) on the first submission. The consequences of a district having to modify and resubmit a report are costly, disruptive and time consuming. A common district misconception is that independent technical review, an absolute submission requirement and very important to the technical quality of a decision document, will guarantee policy compliance. Despite the independent technical review and alternative formulation briefing process, a large percentage of decision documents fail to withstand the Washington level review on their first submission.

The Galveston District has applied bulletproofing as part of their reporting process with great success and has been the vanguard for the Southwestern Division by hosting two division-wide pilot bulletproofing seminars.

This presentation will briefly explain what bulletproofing is and differentiate it from plan formulation. It will stress the importance of "getting it right the first time." The four "C's" of bulletproofing are content, consistency, components and compartmentalization. An example of application of each of the four "C's" will show the audience how bulletproofing has been successfully applied to the project formulation and reporting process in the Galveston District. The conclusion will discuss lessons learned from the two pilot seminars and what should be in a seminar for all disciplines involved in the reporting process.

**Title:** **Use of Intranet Sites to Maximize Effectiveness of Communities of Practice**
**Presenters:** **Daniel L. Small, South Atlantic Division**
**Kenneth M. Lamarca, South Atlantic Division**

Abstract: Information is a valuable and costly resource that must be managed. Implementation of USACE 2012, greater reliance on the qualities associated with virtual communities of practice, and the paradigm shift towards a learning organization and its characteristics, will require greater use of knowledge management tools and methodologies to help gather, organize, share, and analyze information. One of South Atlantic Division's principle means of addressing the needs for strategic knowledge management and support of communities of practice is the intranet website. Implementation will require addressing barriers to full acceptance of knowledge management technology. Barriers include those that exist within the social context of the workforce.

SESSION V
TIME: Wednesday 14 April, 3:30-5:00
ROOM: Gibson (6th Floor)
TRACK: Planning Community of Practice
TOPIC: New Tools and Approaches for Planning
MODERATOR: Darrell Nolton, IWR

PRESENTATIONS:

**Title: Economic Impacts of Recreation Activities at Oregon Coastal and River Ports**
**Presenter: Wen-Huei Chang, PhD, ERDC**

Abstract: Boating and other recreational activities are becoming significant at many Oregon ports. An overall reduction in the shipment of resource-based goods such as logs and timber has limited the expansion of waterborne commerce. With recreational activities becoming more important to the economic health at Oregon coastal ports, there is a need to examine the economic impacts of these activities.

The goal of this study is to characterize the regional economic significance of recreational use of Oregon coastal and river ports. A visitor survey was conducted in the summer of 2002 to collect data needed for this study. The survey was administered by the Engineer Research and Development Center and Portland District of the U.S. Army Corps of Engineers, and Department of Forest Resources at Oregon State University, with assistance from the Oregon Economic and Community Development Department and all 18 participating Oregon ports.

This study surveyed more than 4,000 visitors who participated in various recreational activities at 18 Oregon coastal and river ports. Total recreation visitation was estimated by using information gathered from ports' inputs, surveys from this study, and from secondary data. Economic effects of port visitor spending were estimated by applying visitor spending and use data to regional economic input-output models. For port managers or planners who would like to estimate economic impacts at the port level based on different scenario, two separate models were also developed for this study. Information such as regional multipliers, use estimates and visitor spending is included in these models and the models are available for downloading at the Corps of Engineers' Natural Resources Gateway Website at http://corpslakes.usace.army.mil/employees/economic/economic.html.

**Title: Economic Value and Environmental Significance of the Lower Mississippi River and its Tributaries**
**Presenter: Clarice D. Sundeen, Memphis District**

The Mississippi River is one of the largest watershed systems on the continent. Some say its economic value and environmental significance to the Nation is beyond measure. The 954 miles of lower Mississippi River has provided a navigation route for commerce since 1705, supplied water to improve the quality of life for several generations, and nurtured over 141 animal and plant species within its boundary. Over half of the continental United States directly depends on its continued viability. This is especially true in the lower reaches where two of the top five busiest ports are located, large concentrations of industry, farming, manufacturing and marine transportation facilities exist and tourism sustains the regional economy. While it has not received a Federal appropriation to date, the Lower Mississippi River Resource Assessment (LMRRA) authorized in Section 402 of the Water Resources Development Act of 2000 could provide a unique opportunity for competing interests in the river to work

together to plan its future. In March 2003 six State Governors signed a joint letter in support of conducting the LMRRA, stating in part "with the wise use of these natural resources, sustainable enhancement of the economy of the Lower Mississippi River states can occur, without impacting existing navigation or flood control uses of the river." This presentation will discuss the results of a Economic Profile of the Lower Mississippi River region (January 2004) and highlight why it is important to quantify the river's value in regional planning efforts.

**Title: Bloomsburg Local Flood Protection: Missed Ecosystem Restoration Opportunities**
**Presenter: Jeff Trulick, Baltimore District**

The Bloomsburg Local Flood Protection project team began a GI feasibility study in 1999. In 2004 the team was finally wrapping up the study. Along the way, some significant water resource opportunities were missed and now can only be captured as mitigation features on the flood protection project rather than as a parallel NER component of the project report. The effect of this is that these project features are now only documented as project costs and not as parallel NER components. Rotating biologists, planners and study managers can also be identified for resultant large gaps in institutional knowledge of the local water resource needs. Our authorizing language focused on providing flood damage reduction for the Town but it did not obviate us of our other missions once we are out there on the landscape justifying an NED project.

A fragmented freshwater wetland system will be slightly degraded rather than fully restored; a timber and rock crib dam once used for water driven power but now an orphan dam will mitigate fish habitat impacts rather than being captured as an opportunity to restore anadromous and locally migratory fish access to several miles of a local creek's watershed. Another sheet pile dam upstream of this will not even be in the mix of options and will remain as a blockage to the local fishery. This sheet pile dam was funded partially by the Feds to *temporarily* divert stream water in the creek during the construction of US Route 80 some two decades ago. Such missed and overlooked water resource opportunities should be absorbed into Corps studies. Hopefully this can be a lesson-learned exercise to prevent such lost opportunities in the future.

**Title: Environmental Operating Principles: The Tribal Perspective**
**Presenter: Diane Karnish, Walla Walla District**

Abstract: The purpose of the USACE Environmental Operating Principles is to illuminate the ways in which the U.S. Army Corps of Engineers missions must be integrated with natural resource laws, values, and sound environmental practices. They are meant to give "corporate coherence" to the Corps work, so that people everywhere will recognize the Corps roles in, and responsibilities for, sustainable use, stewardship, and restoration of our Nation’s natural resources and those of other countries in which the Corps conducts activities. And finally, the Environmental Operating Principles make evident the connection among water resources, protection of environmental health, and the security of our Nation. Understanding of the cultural, spiritual and environmental beliefs as it relates to our Tribes is a daunting task. The tribes have a special bond with the natural environment that is totally engrained in their culture and everyday activities. The implementation of the EOP’s and the productivity of our organization are directly related to the quality of our employee’s performance in understanding these beliefs. Insight into Native American beliefs and values can enhance our management effectiveness and help provide leadership necessary for our organization to succeed. Training with the Tribes will give you insight related to cultural values, attitudes, assumptions and expectations as these issues relate to their tribal beliefs (natural and cultural resources). Participants will have the opportunity to experience and learn the importance of environmental sustainability, balancing human activities and the natural systems, and recognize the interdependence of life and the physical environment.

SESSION VI
TIME: Thursday 15 April, 1:30-3:00
ROOM: Gibson (6th Floor)
TRACK: Planning Community of Practice
TOPIC: Innovative Analytical Procedures and Tools
MODERATOR: Dave Tazik, ERDC

PRESENTATIONS:

**Title: LASER Scanning Technology For 3-D Representations**
**Presenter: Carlton Daniel, ERDC-TEC**

The Corps of Engineers is operating and maintaining an aging water resources infrastructure nearing or extending its 50-year planned design life. Ensuring expected performance levels requires rebuilding or replacing existing locks and dams, hydropower facilities, and water supply facilities. The emergence of advanced terrestrial laser scanning technology is enabling the capture, visualization, and modeling of complex structures and sites with an unprecedented combination of completeness, speed and accuracy. The laser scanning models can be used for construction cost estimating, facilities mapping, as-built drawing, subsidence monitoring, surveying, and conceptual design and interference checking. The rapid assessment, development, and insertion of the laser scanning capabilities into the Corps Operations and Maintenance programs will improve the operational effectiveness of a wide range of traditional field measurement requirements in maintaining inland waterway facilities. Other water resource related applications include the modeling of vegetation regeneration regimes, flood mitigation proposals, the definition of riverbank and creek structures, and volume computations. The presentation will describe the results of recent Civil Works projects where commercially available terrestrial laser scanning systems have been used. A description, with illustrative examples of products from the projects, initial accuracy results and time response-related results with future implications are presented.

**Title: Planning Level Cost-Benefit Analysis for Physical Separation at Confined Disposal Facilities**
**Presenter: Shana Heisey-Olig, IWR**
**Keith Hofseth, IWR**

According to ERDC research, the Corps of Engineers dredges more than 400 million cubic yards of sediment each year in its effort to maintain the U.S. navigable waters. Throughout the country existing placement areas for this material are reaching capacity and additional locations are becoming scarce. Finding alternative uses for dredged material may help prolong the much needed storage capacity. Potential beneficial uses of dredged material include various fill alternatives, such as high way construction, shoreline nourishment, and landfill covers, as well as assisting in environmental restoration, through wetland or island creation, erosion control, and biofilters for acid mine drainage. Not only must the material pass tests required to ensure it is physically suitable for beneficial use, but the economic viability must also be confirmed before this option is implemented. The benefits of physical separation and mechanical dewatering of dredged material, required to make it suitable for beneficial use, are based on the next least cost disposal alternative. Analysts must determine the most likely future disposal alternative that would prevail in the absence of separation and dewatering processing. Potential quantitative benefits of separation are reductions in costs and increases in revenue that result from physical separation. In 2002, IWR partnered with ERDC to publish a technical note providing guidance on evaluating the potential for beneficial uses of dredged material. The results of that partnership will be discussed in this presentation.

**Title:** **A Framework for Risk Analysis for Ecological Restoration Projects in the U.S. Army Corps of Engineers**

**Presenter:** **Ronald M. Thom, Battelle**
**Heida L. Diefenderfer, Battelle**
**Keith D. Hofseth, IWR**

Abstract: A Framework for Risk Analysis for Ecological Restoration Projects in the U.S. Army Corps of Engineers" is an Institute for Water Resources report that is in press in 2004. This framework document provides the general planner with a basic understanding of risk analysis in each of the six steps of the USACE ecosystem restoration planning process. Its focus is on risk analysis: identifying the range of possible outcomes from alternative ecosystem restoration actions, assessing the potential for achieving the desired outcome, characterizing the likelihood of adverse consequences, and communicating these findings to stakeholders and decision makers. A conceptual model of the project site and landscape is advocated as a central organizing structure within the six-step process to achieve USACE ecosystem restoration objectives. Conceptual and empirical models are employed to identify uncertainty in planning variables from the formulation of alternative plans through plan selection. In plan comparison, ranges of potential outcomes are considered to incorporate uncertainty. Risk and uncertainty information contributes to eliminating alternatives with unacceptable risk. A fully developed example of a tidal wetland restoration planning process demonstrates the application of this approach. The approach integrates concepts and tools from the science of ecological restoration with proven federal project planning processes and incorporates risk analysis into restoration planning.

**Title:** **Modern Transportation Flood Impact Analysis**

**Presenter:** **Dennis Giba, Chicago District**

Abstract: The transportation impacts due to flooding are analyzed for seven flood severity scenarios. The approach includes assignment and simulation of traffic flow through the region affected by flood closures, using Northwestern University's Visual Interactive System for Transportation Algorithms (VISTA) dynamic traffic assignment (DTA) software. The network and demand data are extracted from planning data representing the Northeastern Illinois region. For comparative analysis, the base case (no flood) and flood scenarios are simulated, and travel time and path choice impacts are reported and analyzed for the network, by Origin Destination pair and for individual corridors.